COMPLETE LISTING OF CLAIMS 1 TO 83

as requested by Examiner Basichas in Office Action dated 09/09/2005

I claim:

1. A method for reducing fuel density, while increasing combustion air density without effecting its volume, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of conventional fluid hydrocarbon fuel, such as natural gas, propane gas, fuel oil or the like, in combustion mechanisms having a combustion area and burners therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) providing fluid hydrocarbon fuel as fuel for said combustion mechanism;

b) directing said fuel through the fuel supply conduit functioning as the mechanism's manifold, extending between the fuel delivery valve, being the fuel inlet, and the mechanism's burner arrangement, being the fuel outlet, defining a heat exchanger assembly that extends through a heating zone related to the combustion mechanism;

c) reducing the fuel density in said fuel delivery manifold by heating the fuel as it flows through said heat exchanger assembly to an optimal fuel operating temperature level ranging between 155 and 900 degrees Fahrenheit;

d) reducing fuel density in order to improve the ratio of fuel mass versus oxygen content available in the combustion air volume prior to ignition without increasing combustion air volume;

e) maintaining a continuous supply of density reduced fuel mass of similar delivery volume to the burners in the combustion area of said combustion mechanism.

f) maintaining a preselected constant supply of combustion air mass to said combustion area at an increased or at least maintained density level and optimal temperature range of between plus 50 and minus 25 degrees Fahrenheit.

2. A method according to Claim 1, wherein the density reduction of the fuel is stabilized with an insulating or heat storage material forming part of the heat exchanger assembly.

3. A method according to Claim 1, wherein said heating zone is located adjacent the exhaust gas vent area of the combustion mechanism.

4. A method according to Claim 1, wherein said heating zone is located adjacent the combustion area of the combustion mechanism.

5. A method according to Claim 1, wherein said heating zone is located adjacent a heat source other than the combustion or exhaust gas vent area of the combustion mechanism.

6. A method according to Claim 1, wherein said preselected optimal fuel operating temperature range is within the preselected general fuel operating temperature range from above 100 degrees Fahrenheit up to a level below the flash point temperature of said fuel.

7. A method according to Claim 1, wherein the combustion air is routed through a contained duct system which provides temperature control and the means for air density increase through cooling within a preselected operating temperature range.

8. A device according to Claim 1, wherein the mechanism is a space heater.

9. A device according to Claim 1, wherein the mechanism is a water heater.

10. A device according to Claim 1, wherein the mechanism is a process heater.

11. A device according to Claim 1, wherein the mechanism is a hydronic boiler.

12. A device according to Claim 1, wherein the mechanism is a furnace.

13. A device according to Claim 1, wherein the mechanism is a turbine.

14. A device for reducing fuel density, while increasing combustion air density without effecting its volume, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of conventional fluid hydrocarbon fuel, such as natural gas, propane gas, fuel oil or the like, in combustion mechanisms having a combustion area and burners therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) a heat exchanger assembly defining a heating zone;

b) a fuel supply conduit defining a heat exchanger assembly located in a heating zone related to the combustion area of the equipment, between the mechanism's fuel inlet valve and the burner arrangement, being the fuel outlet area, said heat exchanger assembly providing the conveyance of fluid hydrocarbon fuel to the equipment burner;

c) means to maintain a continuous supply of fluid hydrocarbon fuel to the burner in the combustion area of said mechanism at a preselected optimal operating temperature level ranging between 155 and 900 degrees Fahrenheit.

d) means to provide a preselected constant supply of combustion air volume at an increased or at least maintained density level to said combustion area at an optimal operating temperature range of between plus 50 and minus 25 degrees Fahrenheit.

15. A device according to Claim 14, wherein the insulating material forming part of said heat exchanger assembly balances any temperature fluctuations occurring in the heating zone.

16. A device according to Claim 14, wherein said heating zone is located adjacent the exhaust gas vent area of the combustion mechanism.

17. A device according to Claim 14, wherein said heating zone is located adjacent the combustion area of the combustion mechanism.

18. A device according to Claim 14, wherein said heating zone is located adjacent a heat source other than the combustion or exhaust gas vent area of the combustion mechanism.

19. A device according to Claim 14, wherein said means to maintain a continuous supply of fuel to the burners in the combustion area of the mechanism at said optimal fuel temperature level operates within a preselected operating temperature range from above 100 degrees Fahrenheit up to a level below the flash point temperature of said fuel.

20. A device according to Claim 14, wherein a preselected volume of combustion air is routed through a contained duct system which provides temperature control and the means for density increase of said combustion air volume at a preselected temperature range prior to combustion.

21. A device according to Claim 14, wherein the mechanism is a space heater.

22. A device according to Claim 14, wherein the mechanism is a water heater.

23. A device according to Claim 14, wherein the mechanism is a process heater.

24. A device according to Claim 14, wherein the mechanism is a hydronic boiler.

25. A device according to Claim 14, wherein the mechanism is a furnace.

26. A device according to Claim 14, wherein the mechanism is a turbine.

Claim 1 to 26 CANCELLED

I claim:

27. (New Claim) **A method** for reducing fuel density while increasing combustion air density, without effecting their specified volume, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of conventional fluid hydrocarbon fuel such as natural gas, propane gas, fuel oil, coal dust slurry or the like, in combustion mechanisms having a combustion area and burners therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) providing fluid hydrocarbon fuel as fuel for said combustion mechanism;

d) directing said fuel through the fuel supply conduit functioning as the mechanism's manifold, extending between the fuel delivery valve, being the fuel inlet, and the mechanism's burner arrangement, being the fuel outlet, defining a heat exchanger assembly that extends through a heating zone related to the combustion mechanism;

c) reducing the fuel density in said fuel delivery manifold by heating the fuel as it flows through said heat exchanger assembly to an optimal fuel operating temperature level ranging between 100 degrees Fahrenheit and the fuel's flash point level;

e) reducing fuel density in order to improve the ratio of fuel mass versus oxygen mass available in the combustion air volume prior to ignition without increasing combustion air volume;

e) maintaining a continuous supply of density reduced fuel mass of similar delivery volume to the burners in the combustion area of said combustion mechanism.

f) maintaining a preselected constant supply of combustion air mass to said combustion area at an increased or at least maintained density level and optimal temperature range of between plus 50 and minus 25 degrees Fahrenheit.

28. (New Claim) A method according to Claim 27, wherein the density reduction of the fuel is stabilized with an insulating or heat storage material forming part of the heat exchanger assembly.

29. (New Claim) A method according to Claim 27, wherein said heating zone is located adjacent the exhaust gas vent area of the combustion mechanism.

30. (New Claim) A method according to Claim 27, wherein said heating zone is located adjacent the combustion area of the combustion mechanism.

31. (New Claim) A method according to Claim 27, wherein said heating zone is located adjacent a heat source other than the combustion or exhaust gas vent area of the combustion mechanism.

32. (New Claim) A method according to Claim 27, wherein said preselected optimal fuel operating temperature range is within the preselected general fuel operating temperature range from 125 degrees to 900 degrees Fahrenheit.

33. (New Claim) A method according to Claim 27, wherein the combustion air is routed through a contained duct system which provides temperature control and the means for air density increase through cooling within a preselected operating temperature range below ambient.

34. (New Claim) A method according to Claim 27, wherein the combustion mechanism converts an oxidation mixture of fuel and air into high temperature high velocity combustion products for the purpose of operating an attached heat transfer system.

35. (New Claim) **A device** for reducing fuel density while increasing combustion air density, without effecting their specified volume, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of conventional fluid hydrocarbon fuel, such as natural gas, propane gas, fuel oil or the like, in combustion mechanisms having a combustion area and burners therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) a heat exchanger assembly defining a heating zone;

b) a fuel supply conduit defining a heat exchanger assembly located in a heating zone related to the combustion area of the equipment, between the mechanism's fuel inlet valve and the burner arrangement, being the fuel outlet area, said heat exchanger assembly providing the conveyance of fluid hydrocarbon fuel to the equipment burner;

c) means to maintain a continuous supply of fluid hydrocarbon fuel to the burner in the combustion area of said mechanism at a preselected optimal operating temperature level ranging between 100 degrees Fahrenheit and the fuel's flash point level.

f) means to provide a preselected constant supply of combustion air volume at an increased or at least maintained density level to said combustion area at an optimal operating temperature range of between plus 50 and minus 25 degrees Fahrenheit.

36. (New Claim) A device according to Claim 35, wherein the insulating material forming part of said heat exchanger assembly balances any temperature fluctuations occurring in the heating zone.

37. (New Claim) A device according to Claim 35, wherein said heating zone is located adjacent the exhaust gas vent area of the combustion mechanism.

38. (New Claim) A device according to Claim 35, wherein said heating zone is located adjacent the combustion area of the combustion mechanism.

39 (New Claim). A device according to Claim 35, wherein said heating zone is located adjacent a heat source other than the combustion or exhaust gas vent area of the combustion mechanism.

40. (New Claim) A device according to Claim 35, wherein said means to maintain a continuous supply of fuel to the burners in the combustion area of the mechanism at said optimal fuel temperature level operates within a preselected operating temperature range from above 125 degrees and 900 degrees Fahrenheit.

41. (New Claim) A device according to Claim 35, wherein a preselected volume of combustion air is routed through a contained duct system which provides temperature control and the means for density increase of said combustion air volume at a preselected temperature range below ambient prior to combustion.

42. (New Claim) A device according to Claim 35, wherein the combustion mechanism converts an oxidation mixture of fuel and air into high temperature high velocity combustion products for the purpose of operating an attached heat transfer system.

Claim 27 to 42 CANCELLED

I claim:

43. (New Claim) **A method** for reducing fuel density while increasing combustion air density, without effecting their specified volume, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of fluid hydrocarbon fuels such as natural gas, propane gas and the like, in combustion mechanisms having a combustion area and at least one burner therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) providing fluid hydrocarbon fuel as fuel for said combustion mechanism;

b) directing said fuel through the fuel supply conduit defining a first heat exchanger assembly that extends through a first heat transfer zone related to the combustion mechanism;

c) reducing the density of said fuel by heating the fuel as it flows through said first heat exchanger assembly to an optimal fuel operating temperature level ranging between 100 degrees Fahrenheit and the fuel's flash point or auto ignition level;

n) maintaining a constant volume of density reduced fuel to the combustion area of said combustion mechanism;

e) providing combustion air for the combustion process in said combustion mechanism;

f) directing said combustion air through an air supply conduit defining a second heat exchanger assembly that extends through a second heat transfer zone of said combustion mechanism;

g) increasing the density of said combustion air by cooling the combustion air as it flows through said second heat exchanger assembly to an optimal air operating temperature level of between plus 50 and minus 25 degrees Fahrenheit;

h) maintaining a constant volume of density increased combustion air to the combustion area of said combustion mechaism.

44. (New Claim) A method according to Claim 43, wherein the density reduction of the fuel is stabilized with an insulating or heat storage material forming part of the heat exchanger assemblies.

45. (New Claim) A method according to Claim 43, wherein said heat transfer zones are related to the exhaust gas vent area of the combustion mechanism.

46. (New Claim) A method according to Claim 43, wherein said heat transfer zones are related to the combustion area of the combustion mechanism.

47. (New Claim) A method according to Claim 43, wherein said heat transfer zones are operated from a source other than the combustion or exhaust gas vent area of the combustion mechanism.

48. (New Claim) A method according to Claim 43, wherein said preselected optimal fuel operating temperature range is within the preselected general fuel operating temperature range from 125 degrees to 900 degrees Fahrenheit.

49. (New Claim) A method according to Claim 43, wherein the combustion mechanism converts an oxidation mixture of fuel and air into high temperature high velocity combustion product for the purpose of operating an attached heat transfer system.

50. (New Claim) A method according to Claim 43, wherein at least one of the two heat exchanger assemblies is operational.

51. (New Claim) A method according to Claim 43, wherein the fluid hydrocarbon fuel is a suspended coal dust, or a coal dust slurry.

52. (New Claim) A method according to Claim 43, wherein the fluid hydrocarbon fuel is a liquid fuel.

53. (New Claim) **A device** for reducing fuel density while increasing combustion air density, without effecting their specified volumes, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of fluid hydrocarbon fuels such as natural gas, propane gas and the like, in combustion mechanisms having a combustion area and at least one burner therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) a fuel supply conduit defining a first heat exchanger assembly located in a heating zone related to the combustion area of the mechanism, providing the means to maintain a constant supply of fluid hydrocarbon fuel to the combustion area of said mechanism at a preselected optimal operating temperature level ranging between 100 degrees Fahrenheit and the fuel's flash point or auto ignition level.

d) a combustion air supply conduit defining a second heat exchanger assembly located in a cooling zone related to the combustion mechanism, providing the means to maintain a constant volume of combustion air to the combustion area of said mechanism at a preselected optimal operating temperature level ranging between plus 50 and minus 25 degrees Fahrenheit.

54. (New Claim) A device according to Claim 53, wherein an insulating material forms part of said heat exchanger assemblies in order to balance any temperature fluctuations occurring in the heat transfer zones.

55. (New Claim) A device according to Claim 53, wherein at least one heat transfer zone is related to the exhaust gas vent area of the combustion mechanism.

56. (New Claim) A device according to Claim 53, wherein at least one heat transfer zone is related to the combustion area of the combustion mechanism.

57. (New Claim). A device according to Claim 53, wherein at least one heat transfer zone is related to an operating source other than the combustion or exhaust gas vent area of the combustion mechanism.

58. (New Claim) A device according to Claim 53, wherein said means to maintain a continuous volume of fuel to the burners in the combustion area of the mechanism at said optimal fuel temperature level operates within a preselected operating temperature range from above 125 degrees and 900 degrees Fahrenheit.

59. (New Claim) A device according to Claim 53, wherein a preselected volume of combustion air is routed through a contained duct system which provides temperature control and the means for density increase of said combustion air volume by cooling the air to a preselected temperature range below ambient prior to combustion.

60. (New Claim) A device according to Claim 53, which provides the means for the combustion mechanism to convert an oxidation mixture of fuel and air into high temperature high velocity combustion products for the purpose of operating a related or attached heat transfer system.

61. (New Claim) A device according to Claim 53, wherein the fluid hydrocarbon fuel is a fuel other than natural gas or propane gas.

62. (New Claim) A device according to Claim 53, wherein at least one of the two heat exchanger assemblies is operational.

Claims 43 to 62, (as submitted by fax transmission Oct. 14), CANCELLED

I claim:

63. (New Claim) **A method** for reducing fuel density while increasing combustion air density, without effecting their specified volume, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of fluid hydrocarbon fuels such as natural gas, propane gas and the like, in combustion mechanisms having a combustion area and at least one burner therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) providing fluid hydrocarbon fuel as fuel for said combustion mechanism;

b) directing said fuel through the fuel supply conduit defining a first heat exchanger assembly that extends through a first heat transfer zone related to the combustion mechanism;

e) reducing the density of said fuel by heating the fuel as it flows through said first heat exchanger assembly to an optimal fuel operating temperature level ranging between 100 degrees Fahrenheit and the fuel's flash point or auto ignition level;

o) maintaining a constant volume of density reduced fuel to the combustion area of said combustion mechanism;

p) providing combustion air for the combustion process in said combustion mechanism;

q) directing said combustion air through an air supply conduit defining a second heat exchanger assembly that extends through a second heat transfer zone of said combustion mechanism;

r) increasing the density of said combustion air by cooling the combustion air as it flows through said second heat exchanger assembly to an optimal air operating temperature level of between plus 50 and minus 25 degrees Fahrenheit;

s) maintaining a constant volume of density increased combustion air to the combustion area of said combustion mechanism.

64. (New Claim) A method according to Claim 63, wherein the density reduction of the fuel is stabilised with an insulating or heat storage material forming part of the heat exchanger assemblies.

65. (New Claim) A method according to Claim 63, wherein at least one of said heat transfer zones is related to the exhaust gas vent area of the combustion mechanism.

66. (New Claim) A method according to Claim 63, wherein at least one of said heat transfer zones is related to the combustion area of the combustion mechanism.

67. (New Claim) A method according to Claim 63, wherein said heat transfer zones are operated from a source other than the combustion or exhaust gas vent area of the combustion mechanism.

68. (New Claim) A method according to Claim 63, wherein said preselected optimal fuel operating temperature range is within the preselected general fuel operating temperature range from 125 degrees to 900 degrees Fahrenheit.

69. (New Claim) A method according to Claim 63, wherein the combustion mechanism converts the oxidation mixture of fuel and air into high temperature, high velocity combustion products to operate a related fluid heat transfer system.

70. (New Claim) A method according to Claim 63, wherein the combustion mechanism is a furnace.

71. (New Claim) A method according to Claim 63, wherein the combustion mechanism is a process heater.

72. (New Claim) A method according to Claim 63, wherein at least one of the two heat exchanger assemblies is operational.

73. (New Claim) A method according to Claim 63, wherein the fluid hydrocarbon fuel includes a suspended coal dust, or a coal dust slurry.

74. (New Claim) A method according to Claim 63, wherein the fluid hydrocarbon fuel includes a liquid fuel.

75. (New Claim) **A device** for reducing fuel density while increasing combustion air density, without effecting their specified volumes, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during the process of ignition and combustion of fluid hydrocarbon fuels such as natural gas, propane gas and the like, in combustion mechanisms having a combustion area and at least one burner therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

b) a fuel supply conduit defining a first heat exchanger assembly located in a heating zone related to the combustion area of the mechanism, providing the means to
maintain a constant supply of fluid hydrocarbon fuel to the combustion area of said mechanism at a preselected optimal operating temperature level ranging between 100 degrees Fahrenheit and the fuel's flash point or auto ignition level;

c) a combustion air supply conduit defining a second heat exchanger assembly located in a cooling zone related to the combustion mechanism, providing the means to maintain a constant volume of combustion air to the combustion area of said mechanism at a preselected

optimal operating temperature level ranging between plus 50 and minus 25 degrees Fahrenheit.

76. (New Claim) A device according to Claim 75, wherein an insulating material forms part of said heat exchanger assemblies in order to balance any temperature fluctuations occurring in the heat transfer zones.

77. (New Claim) A device according to Claim 75, wherein at least one heat transfer zone is related to the exhaust gas vent area of the combustion mechanism.

78. (New Claim) A device according to Claim 75, wherein at least one heat transfer zone is related to the combustion area of the combustion mechanism.

79. (New Claim). A device according to Claim 75, wherein the heat transfer zones are related to an operating source other than the combustion or exhaust gas vent area of the combustion mechanism.

80. (New Claim) A device according to Claim 75, wherein said means to maintain a continuous volume of fuel to the burners in the combustion area of the mechanism at said optimal fuel temperature level operates within a preselected operating temperature range from above 125 degrees and 900 degrees Fahrenheit.

81. (New Claim) A device according to Claim 75, wherein a preselected volume of combustion air is routed through a contained duct system which provides temperature control and the means for density increase of said combustion air volume by cooling the air to a preselected temperature range below ambient prior to combustion.

82. (New Claim) A device according to Claim 75, which provides the means for the combustion mechanism to convert an oxidation mixture of fuel and air into high temperature, high velocity combustion products for the purpose of operating a related fluid heat transfer system.

83. (New Claim) A device according to Claim 75, wherein the fluid hydrocarbon fuel is a fuel other than natural gas or propane gas.

84. (New Claim) A device according to Claim 75, wherein at least one of the two heat exchanger assemblies is operational.

AMENDMENTS

Claims 1 to 62 and Claims 63 to 84 CANCELLED

I claim:

85. (New Claim) **A method** to improve the efficiency of all processes of combustion of fluid hydrocarbon fuels, through reducing the density of said fuels in combination with increasing the density of combustion air without effecting their specified volumes, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, during ignition and combustion of fluid hydrocarbon fuels such as natural gas, propane gas and the like, in all combustion mechanisms having a combustion area and at least one burner therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

a) providing fluid hydrocarbon fuel as fuel for said combustion process;

b) directing said fuel through the fuel supply conduit defining a first heat exchanger assembly that extends through a first heat transfer zone related to the combustion process;

f) reducing the density of said fuel by heating the fuel as it flows through said first heat exchanger assembly to an optimal fuel operating temperature level ranging between 165 degrees Fahrenheit and the fuel's flash point or auto ignition level;

t) maintaining a constant volume of density reduced fuel supply to said combustion mechanisms for said combustion process;

u) providing combustion air to said combustion mechanisms for said combustion process;

v) directing said combustion air through an air supply conduit defining a second heat exchanger assembly that extends through a second heat transfer zone of said combustion mechanisms;

w) increasing the density of said combustion air by cooling the combustion air as it flows through said second heat exchanger assembly to an optimal air operating temperature level of between ambient and minus 50 degrees Fahrenheit;

x) maintaining a constant volume of density increased combustion air to said combustion mechanisms combustion area for said combustion process.

86. (New Claim) A combustion method according to Claim 85, wherein the density reduction of the fuel is stabilised with an insulating or heat storage material forming part of the heat exchanger assemblies.

87. (New Claim) A combustion method according to Claim 85, wherein at least one of said heat transfer zones is related to the exhaust gas vent area of the combustion mechanism.

88. (New Claim) A combustion method according to Claim 85, wherein at least one of said heat transfer zones is related to the combustion area of the combustion mechanism.

89. (New Claim) A combustion method according to Claim 85, wherein said heat transfer zones are operated from a source other than the combustion or exhaust gas vent area of the combustion mechanism.

90. (New Claim) A combustion method according to Claim 85, wherein said preselected optimal fuel operating temperature range is within the preselected general fuel operating temperature range from 165 degrees to 900 degrees Fahrenheit.

91. (New Claim) A combustion method according to Claim 85, wherein the combustion mechanism converts the oxidation mixture of fuel and air into high temperature, high velocity combustion products to operate a related fluid heat transfer system.

92. (New Claim) A combustion method according to Claim 85, wherein at least one of the two heat exchanger assemblies is operational.

93. (New Claim) A combustion method according to Claim 85, wherein the fluid hydrocarbon fuel includes a coal dust suspended in gas, air or liquid, forming a fluid coal dust slurry.

94. (New Claim) A combustion method according to Claim 85, wherein the fluid hydrocarbon fuel is a liquid fuel.

95. (New Claim) **A device** consisting of a combination of components for operating the combustion method of reducing fuel density together with increasing combustion air density, without effecting the specified fuel or air volumes, thereby significantly changing the ratio of fuel mass versus combustion air mass, hence oxygen mass, such as to improve the combustion efficiency during the process of ignition and combustion of fluid hydrocarbon fuels such as natural gas, propane gas and the like, in mechanisms having a combustion area and at least one burner therein for converting said fuel into energy, such as heat, thrust or torque, comprising:

d) a fuel supply conduit defining a first heat exchanger assembly located in a heating zone related to the combustion area of the mechanism, providing the means for the process of maintaining a constant supply of fluid hydrocarbon fuel to the combustion area of said combustion mechanism at a preselected optimal operating temperature level ranging between 165 degrees Fahrenheit and the fuel's flash point or auto ignition level;

e) a combustion air supply conduit defining a second heat exchanger assembly located in a cooling zone related to the combustion mechanism, providing the means for the process of maintaining a constant volume of combustion air to the combustion area of said mechanism at

a preselected optimal operating temperature level ranging between plus ambient and minus 50 degrees Fahrenheit.

96. (New Claim) A device according to Claim 95, wherein at least one heat transfer zone is related to the exhaust gas vent area of the combustion mechanism.

97. (New) A device according to Claim 95, wherein at least one heat transfer zone is related to the combustion area of the combustion mechanism.

98. (New Claim). A device according to Claim 95, wherein the heat transfer zones are related to an operating source other than the combustion or exhaust gas vent area of the combustion mechanism.

99. (New Claim) A device according to Claim 85, wherein a preselected volume of combustion air is routed through a contained duct system which provides temperature control and the means for density increase of said combustion air volume by cooling the air to a preselected temperature range below ambient prior to combustion.

100. (New Claim) A device according to Claim 85, which provides the means for the combustion mechanism to convert an oxidation mixture of fuel and air into high temperature, high velocity combustion products for the purpose of operating a related fluid heat transfer system.

101. (New Claim) A device according to Claim 85, wherein the fluid hydrocarbon fuel is a fuel other than natural gas or propane gas.

102. (New Claim) A device according to Claim 85, wherein at least one of the two heat exchanger assemblies is operational.

103. (New Claim) A device according to Claim 85, wherein the fluid hydrocarbon fuel is a coal dust suspended in a liquid, in gas or air.